Appendix of All Claims

Claims **1–44** (cancelled)

45. (Previously presented) A method of controlling a brush chipper of a type having an engine, cutters, feed rollers, a hydraulic control for rotating said feed rollers, a feed table for supporting material to be chipped and a controller, said method comprising:

monitoring a condition of the brush chipper at a first time;

monitoring the condition of the brush chipper at a second time, said second time being later than said first time;

comparing the condition of the brush chipper at the second time to the condition of the brush chipper at the first time; and

modifying performance of one of the engine, cutters, or feed rollers in response to said comparison.

46. (Previously presented) The method of claim **45** wherein the condition of the brush chipper comprises an engine speed, said method comprising:

operating the feed rollers and cutters to cut brush while monitoring the engine speed;

using the engine speeds at the first and second times to calculate the engine deceleration for a time period to determine a calculated deceleration;

using the calculated deceleration to predict the engine speed in a first future time period and if the predicted engine speed is below a droop threshold to stop the

feed rollers for a second time period and monitor the engine speed to calculate the engine acceleration to determine a calculated acceleration;

using the calculated acceleration to predict the engine speed in a second future time period and (a) if the predicted engine speed is again below the droop threshold, reverse the feed rollers, and (b) if the predicted speed is above the droop threshold operate the feed rollers in a forward directions.

47. (Previously presented) The method of claim **45** wherein the condition of the brush chipper comprises a speed of the cutters, said method comprising:

operating the feed rollers and cutters to cut brush;

monitoring the speed of the cutters to determine a maximum load condition;

when the monitored speeds of the cutters at the first and second times indicates a maximum load condition will occur, because the engine speed has dropped or will drop below a predetermined speed, stopping the feed rollers;

continuing to monitor the speed of the cutters and reversing the feed rollers for a predetermined period of time;

if the engine speed continues to drop, reversing the feed rollers for a second predetermined period of time; and

if the engine speed is above a recovery point, starting the feed rollers in a forward direction.

48. (Previously presented) The method of claim **45** wherein the condition of the brush chipper comprises a speed of the cutters, said method comprising:

operating the feed rollers and cutters to cut brush;

monitoring the speed of the cutters at the first and second times to determine a maximum load condition;

when the monitored speed of the cutters indicates a maximum load condition will occur, stopping the feed rollers;

reversing the feed rollers for a predetermined period of time; and

operating the feed rollers in a forward direction to deliver brush to the cutters.

49. (Previously presented) The method of claim **45** wherein the condition of the brush chipper comprises a condition of a hydraulic switch, said method comprising;

operating the feed rollers and cutters to cut brush;

monitoring the condition of the hydraulic switch for sensing a predetermined high pressure in the hydraulic control at the first and second times;

if the comparison indicates the hydraulic switch senses said predetermined high pressure for a predetermined time duration, momentarily reversing the feed rollers for a predetermined period of time; and

resuming operation of the feed rollers to cut brush.

50. (Previously presented) The method of claim **45** wherein the condition of the brush chipper comprises a speed of the feed rollers, said method comprising:

operating the feed rollers and cutters to cut brush while monitoring the speed of said feed rollers at the first and second times;

identifying a feeding problem by comparing the speeds of said feed rollers at the first and second times;

momentarily reversing the feed rollers for a predetermined period of time; and

resuming operation of the feed rollers to cut brush.

51. (Previously presented) The method of claim **45** comprising:

sensing how long the brush chipper has not been used for chipping while set in a normal operating condition;

if the brush chipper has remained unused for a predetermined period of time, reducing the engine speed to idle while allowing the feed rollers to rotate;

when said feed rollers move apart, stopping the feed rollers until said engine returns to a predetermined speed; and

after said engine returns to said predetermined speed, starting the feed rollers to allow brush to be pulled into the cutters by the feed rollers.

52. (Previously presented) The method of claim **45** comprising:

sensing how long the brush chipper has not been used for chipping while set in a normal operating condition;

if the brush chipper has remained unused for a predetermined period of time, reducing the engine speed to idle while allowing the feed rollers to rotate;

if the engine speed slows below idle speed due to brush being cut again, stopping the feed rollers until said engine returns to a predetermined speed; and

after said engine returns to said predetermined speed, starting the feed rollers to allow brush to be pulled into the cutters by the feed rollers.

53. (Previously presented) The method of claim **45** wherein:

operating the brush chipper at full engine speed with the feed rollers rotating;

monitoring the time sequence of events related to the utilization of the brush chipper to determine inactive use wherein said sequence of events being monitored comprising at least one of:

a time sequence of the distance between feed rollers;

a time sequence of the pressure in feed roller hydraulic circuit; and

a time sequence of engine loading; and subsequently modifying the engine to an operating state of slower speed in response to monitoring the time sequence of events.

54. (Previously presented) The method of claim **45** wherein subsequent said monitoring further includes monitoring a distance between the feed rollers with the engine in low idle wherein when the distance between the feed rollers increases, indicating that material is being fed; and

controlling the hydraulic control for rotating the feed rollers to stop the rotation of the feed rollers for a predetermined time period, while the engine speed is increased to full speed, and using the hydraulic control for rotating the feed rollers to re-start rotation of the feed rollers.

55. (Previously presented) The method of claim **45** wherein the condition of the brush cutter monitored comprises a speed of rotation of the engine and comparing the condition of the brush chipper at the second time to the condition of the brush chipper at the first time comprises calculating a rate of deceleration and the modifying of the performance comprises stopping or reversing the feed rollers.

56. (Previously presented) The method of claim **45** comprising:

operating the feed rollers and cutters to cut brush;

monitoring the time sequence of an operating parameter during a first time period;

making a first adjustment to the operating of the feed rollers in response to a predetermined characteristic of the time sequence of the operating parameter in the first time period;

monitoring the time sequence of an operating parameter during a second time period during which the first adjustment should affect the operating parameter; and

making a second adjustment to the operating of the feed rollers, different than the first adjustment, in response to a predetermined characteristic of the time sequence of the operating parameter in the second time period.

57. (Previously presented) The method of claim **56** wherein:

the operating parameter monitored in the first time period comprises the speed of the cutters;

the first adjustment of the feed rollers comprises stopping the feed rollers and the predetermined characteristic comprises the speed of the cutters dropping below a predetermined speed;

the operating parameter monitored in the second time period comprises the speed of the cutters;

the second adjustment to the operation of the feed rollers comprises either operating the feed rollers in reverse when the predetermined characteristic of the speed of the cutters indicates the speed will stay below the predetermined speed or is continuing to drop or operating the feed rollers in forward when the predetermined characteristic of the speed of the cutters indicates the speed will be above the predetermined speed.

58. (Previously presented) A method of controlling a brush chipper of a type having an engine, cutters, feed rollers, a hydraulic control for rotating said feed rollers, a feed table for supporting material to be chipped and a controller, said method comprising:

monitoring a time sequence of events related to the utilization of the brush chipper;

calculating a rate of deceleration based on the monitored time sequence of events; and

modifying performance of one of the engine, cutters, or feed rollers in response to said monitoring and calculating.

Respectfully submitted,

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